Notice of Allowability	Application No.	Applicant(s)	
	09/886,873	STELLMACHER, MAX	
	Examiner	Art Unit	
	Jennifer Doan	2874	

-- The MAILING DATE of this communication appears n the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.

2. ☒ The allowed claim(s) is/are *1-30*.

3. ☒ The drawings filed on *21 June 2001* are accepted by the Examiner.

4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☒ All b) ☐ Some* c) ☐ None of the:
      1. ☒ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 0601
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .
7. ☐ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S STATEMENT OF REASONS FOR ALLOWANCE

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Reasons for allowance

2. The following is an examiner's statement of reasons for allowance:

The prior art of record fails to disclose or reasonably suggest a method and an apparatus of an optical mode transformer having a buffer compensator disposed within the n-doped InP buffer; wherein the buffer compensator includes Ga and As atoms to compensate for the carrier-induced change in refractive index of the n-doped InP buffer layer; it then results in a compensated n-doped InP buffer layer such that the compensated n-doped InP buffer layer has a reduced index difference between the p-doped InP re-growth layer and the compensated n-doped InP buffer layer.

The most relevant reference, Miura et al. (U.S. Patent 5,175,788) disclose a light beam profile transforming element in which two parallel plastic waveguide layers having a refractive index gradually varying in the direction of light propagation; the variation of the refractive index can be obtained by varying a concentration of a dopant in a matrix; and the variation of the concentration of a dopant can be obtained by varying an irradiation amount of combination of a matrix and a dopant monomer with an ultra violet ray. However, this is totally different from the claimed invention.

Claims 1-30 are therefore allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Thulke (U.S. Patent 5,208,878), Schimpe (U.S. Patent 5,940,569) and Weber (U.S. Patent 6,421,492) disclose a semiconductor optical device having n-doped InP substrate, buffer layer, a passive waveguide and a top layer of the passive waveguide. However, the structure and operation of the device are distinct from that of the claimed invention. Therefore, they fail to disclose or suggest the limitations above.

4. The prior art documents submitted by applicants in the Information Disclosure Statement filed on 06/21/2001, have all been considered and made of record (note the attached copy of form PTO-1449). They also fail to disclose or suggest the limitations above.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer Doan whose telephone number is (571) 272-2346. The examiner can normally be reached on Monday to Thursday from 6:00am to 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (571) 272-2344. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer Doan

JD

February 4, 2004

John D. Lee
Primary Examiner

COMPENSATION OF THE REFRACTIVE INDEX OF DOPED InP

JD
02/04/04

CROSS REFERENCE TO RELATED APPLICATION

This application claims the benefit of European Application No. 00402450.1, filed September 6, 2000. now E.P. 1186918

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates generally to opto-electronic devices, and particularly to an optical mode transformer.

2. Technical Background

Optical mode transformers (OMTs) are known to reduce optical coupling loss by mode transforming between a smaller mode of an optical device and a larger mode of an optical fiber. Spot-size transformation is needed from the 1-2um range of the (usually elliptical) guided mode of the optical device (such as a laser, for example) to the 8-10 um range of the (circular) guided mode in the optical fiber (usually single-mode). The OMT is the region in an electro-optical device, including the optical device monolithically defined within the electro-optical device, where the shape of the guided wave is transformed. The transformation is obtained by the variation of the shape of the waveguides, such as by tapering. However, carrier-induced change in the refractive index of the material used for the OMT due to doping has increased coupling loss more than expected. The presence of dopants of opposed conductivities, is necessary for the electron transport of active optical devices. In a typical laser, for example, an active